

mecheleciv



VOL. 13

NOVEMBER 1953

NO. 2



Engineers' Council Meeting

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THE GEORGE WASHINGTON UNIVERSITY**



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ON OUR COVER

A satirical representation of an Engineers' Council Meeting by Hal Gullen. An explanation of your Engineers' Council begins on page 9.

FRONTISPIECE

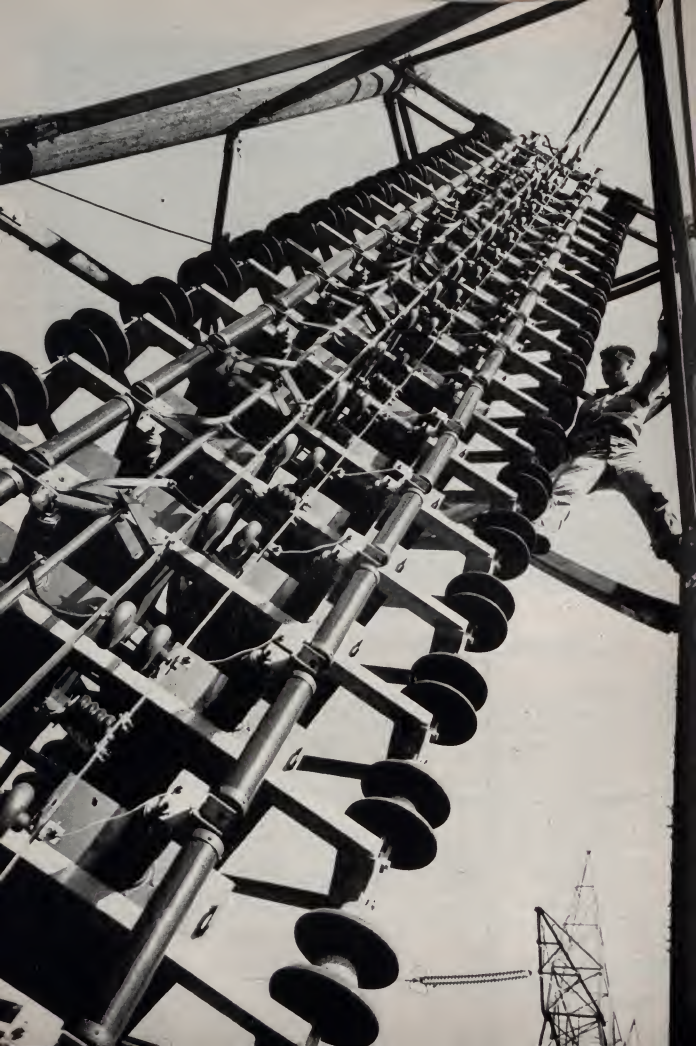
Higher transmission voltages have created a need for new knowledge about lightning surges. This 2000-kv surge generator has been erected by Westinghouse at the American Gas and Electric Company's experimental 500-kv transmission line at Brilliant, Ohio, where the two companies are cooperating in a field-test program. The surge generator charges twenty 100-kv capacitor banks in parallel, discharges them in series.

—COURTESY OF WESTINGHOUSE ELECTRIC

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This and That—

Building X is gone. It is very doubtful if anyone will mourn its passing. It was the eyesore of the G. W. U. campus. Hundreds of engineering students have suffered through cold drawing classes in "X." It has been the butt of many jokes and has been the cause of the use of profanity. However, one must remember that "X" has served its purpose and its razing heralds the coming of what we have all waited for a long time, the new engineering building, Tompkins Hall.

The annual Christmas tree lighting ceremonies sponsored by the Engineers' Council will be held next month. For the past two years the organization of the ceremonies has been poor. This year it would be nice to see the representatives of the engineering students make the ceremony run smooth and efficient.

To do this it is proposed that the event be well publicized and receive the complete support of the engineering students, the student body as a whole and the faculty. It is very discouraging for a few, meaning the Engineers' Council, to plan and prepare for a big occasion such as this and then have negligible response from the student body. Let's all turn out this year and make the occasion worthwhile.

Comment on the Engineers' Mixer, held November 7th, is very diversified. Some in attendance thought it was a huge success while others thought it was a flop. The attendance was not too good a representation of the Engineering School. Less than one-third of the engineering students were there. Many did not stay long. The probable reason for this was that there was too much time taken up by speakers and not enough time to mix.

Evolution of the Engineering Student

by Benjamin C. Cruickshanks
Professor of Mechanical Engineering

A comparison of the engineering student of today and his surroundings with his counterpart of the date I started teaching, thirty-three years ago, is obviously a comparison of two successive generations—of father and son. When assigned this topic, I recalled that recently several sons and one daughter of former students have been enrolled in my classes.

A comparison of this kind is not likely to be very accurate or even necessarily fair because it is not based on statistics and because our views are colored and clouded by the "fond memories of the good old days" and the "stark realities of the present time." "Once upon a time," as all good fairy stories should start—once upon a time the writer was younger, more nearly the age of his students, and had closer contacts through three-hour class periods in drafting and laboratory. During more recent years, in the absence of laboratory courses, the only opportunities to get acquainted with students has been through registration procedure and lecture classes that were often larger than normal, owing to the wave of "GI" students.

A clear picture of two generations of engineering students is not easy to present; for evolution is a gradual change which we who live through it are not likely to appreciate. So the answer may seem to be that students past and present are just the same. Perhaps, however, an analysis of various items that constitute student life might show some variations or distinct differences. The following comparisons are given merely as a recitation of changes, not in any sense as an evaluation as to whether the points referred to indicate progress or retrogression.

In the beginning we may assume that the source of our raw material apparently remains about the same. In other words, our students are mainly local boys, either direct from high school or employed here, plus a large percentage of transfer students with advanced standing, and lastly, a sprinkling of foreign students, who frequently go places. Two weeks before meeting my first class there was a letter from Egypt waiting for me. A prospective student had taken my name from the Catalogue and had ordered his checks sent in my name. Two

weeks after meeting my last class this spring I received a note of appreciation from a graduating senior of India. As to the latter student I felt myself fortunate in having adhered to pre-New Deal practice of calling students by their last names; that Indian student had fifteen letters and six syllables in his first name but only five letters in his last. Strangely enough, though we have registered nationals from all over the world, South America appears to be an exception. At least, no student from any of the South American countries comes readily to mind.

Facilities in the old days were meagre, but there were bright spots. Old Lisner Hall, which stood where the University Library now stands, housed nearly everything from the President's Office down. A few classrooms and the Cashier's Office were in nearby converted residences, and the chemistry classes were in the Medical School building near 13th and H Streets. Students had only ten minutes between a class at 2023 G Street and one at 1335



Old Lisner Hall. The University Library now occupies this site.



This is the 2000 block of G Street today. To the left and below you see how this same street looked when Prof. Cruickshanks was a student. Classes were then held in the converted houses.



H Street; ponder that for a moment, eight blocks in ten minutes.

In front of Lisner Hall was the "Concrete Crampus" where everyone, freshman and senior alike, rubbed elbows, making it unnecessary to have official "mixers." And then there was the drafting-room, which incidentally replaced the "Crampus" as a meeting place in bad weather. Ah, there was a fond memory (for the instructors) that the record will prove

was no myth. More than sixty students were accommodated at one time with ample floor space, table space, board racks, and instruments lockers, and there was a drafting-room office. Not since "Old Lisner" was torn down have the drafting classes been comfortably housed. Pity today's poor freshman and his instructors, exiled to "Siberia" (Building X).

Until about 1950 the Mechanical Laboratory was located in the rear of Lisner Hall in a brick building that formerly was a wood-working shop. The quarters were commodious and the equipment reasonably up-to-date. Maintenance was excellent as the Superintendent of Buildings, a licensed steam engineer, had his office in a room in the laboratory. The present laboratory is smaller than the old one and maintenance has been left to the instructor. The future appears no brighter.

In passing, it might be of interest to note scholastic changes as a sort of background for our comparison. Entrance requirements have not changed appreciably. The foreign language requirement has been dropped, as have solid geometry and one year of physics or chemistry. Trigonometry has been added. Some changes in curricula have been made, such as the option offered in communications

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Here is a story. Each term many students request changes in their curriculum, some for sound reasons, some for convenience, and some to avoid difficult courses. The faculty has established a policy as a guide to solution of the more common problems presented, so that legitimate student

needs can be satisfied with a minimum of red tape. Usually then, student requests can be acted on quickly, even when the volume of requests is large. At registration time, however, the volume of requests becomes quite large at the same time the demands on faculty and administration are at a peak. This term a few students sent me special delivery letters, or called in person, immediately before, during, and immediately after the registration period, requesting various changes in curriculum. When the requests were not acted on immediately some of the students became filled with indignation. Now, all the facts in the cases at issue were available as early as July this past summer and any individual genuinely concerned over a curriculum difficulty could be expected to have known his requirements long before the last week of September.

Is it reasonable that students who play checkers with their curriculum might plan their moves somewhat more in advance, so that they at least give the impression they know how to play the game and that their attack on education has some logical strategic plan?

A vagrant thought occurred to me during those moments of luxurious discomfort between awakening and arising a few mornings back. Why doesn't someone get together a few faculty and student wives to see what might be done about improving the attractiveness of Davis-Hodgkins? A few drapes, some table or floor lamps, and whatnot might make the house much more livable.

I have discussed many times in the last month the purpose of an engineering education. Have you asked yourself the purpose of your education? It seems to me sometimes that an engineering education has as its purpose the development of understanding of concepts of science; engineering, and life; the encouragement of a desire to seek the truth; and the attainment of a competitive position in regard

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The Mecheleciv has been accepted as a member of the Engineering College Magazines Associated. This organization was formed about 30 years ago by 11 college engineering magazines and now has 36 member publications. Its purpose is to raise the quality of engineering college magazines. To become a member of the ECMA a magazine must be the publication of a college having one or more accredited engineering curriculum and the magazine must conform to the standards of practice of the ECMA.

For the past four years MECHELECIV has conformed to these standards of practice and has grown from a pamphlet to a full-fledged magazine. It was due to the diligent efforts of former Editors Seabrooke, Plyer and Moe that we have enjoyed this growth and while these former editors were expanding and improving your magazine they had ECMA membership in mind.

Having had the groundwork laid for him, it was an easy job for your present editor to petition for membership at the 1953 ECMA convention. The convention was held at the University of Illinois in Urbana, Illinois, on September 24, 25 and 26. It was on the 26th near the close of the business meeting that the MECHELECIV'S petition was heard. After a few minutes deliberation the MECHELECIV became the 36th member.

This is an important step in the growth of your magazine. Just 12 years ago it had its birth as a few mimeographed sheets. A few years later it became a 8" by 6" pamphlet. For the last four years it has measured 11 $\frac{1}{2}$ " by 8 $\frac{3}{4}$ " as required by ECMA standards with 7" by 10" page faces.

It is hoped that in the future the MECHELECIV will continue to grow as it has in the past. Being a member of the ECMA will be beneficial in many ways. We will have the comments of professional literary and lay-out critics, exchanges with the 35 other member magazines and perhaps in time to come more advertising.

Can You Name It!

Let's have your suggestion for a new name for **Mecheleciv**. Quite a few suggestions have been received so far but we will not know what they are until December 15th. See the October issue of Mecheleciv for the contest rules. If you do not wish to see the name changed drop us a note and say so.

YOUR ENGINEERS' COUNCIL

by Barry Boyce, BME '54
Vice-President, Engineer's Council

What is it? What does it do? These may seem like unusual questions to ask about the elected student body that represents you, the engineering student. It is surprising, though, the number of students that ask these very same questions when they first hear of the Engineers' Council.

Perhaps, if the student is interested, he will investigate further, but in all probability the students that he queries will also be in the dark. For this reason it is felt necessary to acquaint the engineering student with the Engineers' Council—his activities organizer and liaison with the faculty.

The next question would seem to be: Why is a liaison group needed? Why do the Engineering students need a representative body and of what value is an activities organizer? Perhaps these questions are best answered by citing a few tasks that are undertaken by the Engineers' Council. The foremost or prime purpose of the Council is to promote a healthy school spirit. To do this the Council publishes the MECHLECIV. It is in effect the board of directors and treasurer of your magazine. Through MECHLECIV the Council endeavors to keep you engineering students better informed of school activities, curriculum changes, current news in the engineering field, and gives you the opportunity to air any gripes you may have. To expound upon this last point a bit

further, if there is something that is bothering you sit down and write a little note about it to the Editor of your magazine. He is liable to print it and see what other people think of your troubles. Perhaps others may have the same feelings on a certain subject as you do.

At the beginning of each school year the council sponsors the Engineers' Mixer. Its purpose is to acquaint the student with his fellow students, the engineering faculty, and the professional societies and fraternities. It also aids in establishing a group or fraternal attitude among all concerned. In the past the 'Mixer' has been a big beer bust, this year ladies were invited for the first time and the 'Mixer' turned out to be a success despite the absence of the hops. It also was more informative to the engineering student and undoubtedly more thoroughly enjoyed by all concerned.

Just prior to the Christmas holidays the Council and the engineering societies sponsor the annual Christmas Tree lighting ceremonies on the campus behind the library. This is a time for rejoicing since it heralds the coming of the Christmas recess. The date of this ceremony for this year has not been decided upon, but it will be published well in advance.

The largest event sponsored by the Council is the annual Engineers' Banquet and Ball. Prior to this year they have been separate

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This is your Engineers' Council. Front Row, Phil Costango, House Manager; Bill Weidemeyer, ASCE; Vic Hobbs, Sigma Tau; Bill Yates, IRE; Bob Mitchell, AIEE; Herb Rosen, Sigma Tau; Leon King, Mecheleciv. Back Row: Shep McLauran, Theta Tau; Bill Harris, AIEE; Walt Cornell, ASCE; Barry Boyce, Theta Tau. Not shown are: Brent Quinn, ASME; Phil Martin, ASME; and Bob Montgomery, IRE.

SOIL MECHANICS

by Harry M. Brandler, Bee '55

Beginning in the spring of the 1953-54 school year the Civil Engineering Department of the George Washington University School of Engineering will offer a course never before taught at this University. This course is **Soil Mechanics**. Professor H. A. Miklofsky will be the instructor. The reader who has penetrated this far in the article may rightly ask: "What is Soil Mechanics?" The author was led to understand that a few instructors of this subject are asking themselves this same question. The introduction of the science of soil mechanics into the United States is generally accredited to Dr. Karl Terzaghi in 1925. The science has grown very rapidly since its introduction. Many soil mechanics laboratories have been built, and many universities have offered courses in this subject. It is the purpose of this article to throw some light on the subject of soil mechanics, and to arouse interest in it.

Any structure, such as a building, bridge, pier, or dam, must be founded on soil or on a ledge. From countless ages ago to date, one of the first problems in any construction project is: "What is the proper foundation?" Let us take an example: New York City has a number of extremely tall buildings, commonly called skyscrapers. Washington, D. C., on the other hand, is forbidden by law to have buildings over 12 stories high, and if they are that high, they must be spread out over a fairly large area. Why cannot skyscrapers be built in the Nation's Capital? The answer,—the nature of the soils in the two cities are different. New York has a hard soil composed of rock, while Washington has a soft soil, ideal for growing trees, but not for building skyscrapers.

An engineer desiring to construct a railway roadbed, a building, a dam, bridge, etc., must always know the characteristics, nature, and type of soil that is ultimately going to support the load. A thorough knowledge of soil mechanics is essential. Soil mechanics is a science,—a science dealing with all phenomena affecting the action of soils in such a way as to be of concern to the engineering profession. Soil mechanics is a scientific approach to the understanding of soil action.

Some of the concepts to be covered in the course are: Geology of rock and soil formation, shearing characteristics of sands and clays, lateral earth pressures, pressures against tunnels, and other concepts. A few of these concepts and some others will now be discussed and described.

The geology of rock and soil formations will describe the various types of soil and rock (there is a difference) transformation cycles, also, how the soil is transported by natural means from one place to another. Some good examples: winds blowing dust and fine soil particles, and active volcano and scattering the rock; erosion, rivers carrying soil from one place to another. Rock minerals and their chemical decomposition will also be considered.

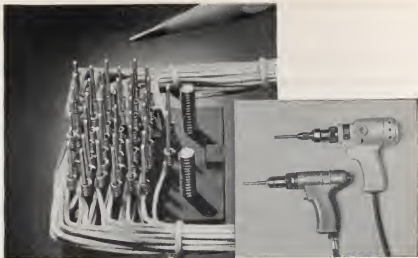
Shearing characteristics of sand will describe changes in properties of various types of sands when they are subjected to shearing stresses. Since sand is a large component of most types of soil, this is a fairly important study. It will be shown that dense sands expand and loose sands contract during shear. The whys and wherefores will be shown. There is quite a difference between the supporting strengths of sand above and below water. The results of numerous experiments with sand show that its ultimate strength is a function of its density.

The shearing characteristics of clay, another important and large component of most soils are more complex, and a bit of chemistry is tied up with them. Therefore it is important to know the mineral content of the clay and the mineral content of the surrounding soils, as some chemical reaction may take place.

Pressures against tunnels are an important consideration when designing. The consideration of earth pressures against subaqueous tunnels is of minor importance, since water pressures are the main sources of pressure and will govern the structural design of the tunnel. However, the situation is quite different in the case of tunnels, built through deep deposits of plastic clay. There again, a knowledge of the nature of the clay, its various characteristics, and its pressures under various

(Please turn to page 18)

Good Connections ...electrically speaking



New solderless method permits the making of very closely spaced connections, as shown on this experimental terminal block.

Electrically powered "wire wrap" tool (above) and compressed air tool (below) for making wrapped solderless connections.

GOOD CONNECTIONS are mighty important to us for, you see, we make more than a billion electrical connections each year. It takes that many to manufacture and install complex telephone equipment in the Bell System.

That's why the revolutionary new method of making electrical connections *without solder*—a method created by Western Electric engineers together with their teammates at Bell Telephone Laboratories—is indeed one of the significant engineering achievements of recent years.

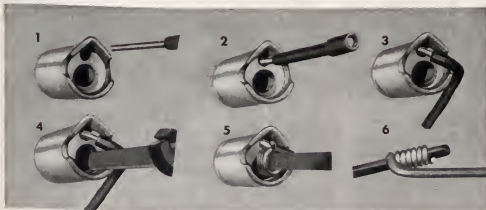
Like most really creative engineering jobs, the development of a tool to make solderless connections grew out of a problem. We had to find a way to connect our newly designed wire spring relay to other components in giant bays of switching equipment. This new relay—something of an engineering achievement itself—can have as many as 36 terminals in an area only 1-3/8" by 11/16". Obviously, the conventional method of hand-wrapping and soldering wires onto the terminals is extremely difficult in such a small area.

After more than five years of research and experimentation, the engineers came up with a pistol-like power tool

capable of making mechanically sound solderless connections. Shown above are two tools now used at Western Electric manufacturing locations. They literally shoot wire onto terminals . . . and do it surer, faster and less expensively than conventional methods using solder. That's not all. The new "wire wrap" tool keeps equipment free from solder splashes, wire clippings and reduces bent and distorted terminals. Electrically, the "wire wrap" tool gives a far better connection than can be made manually . . . the high pressure contacts are stronger, cleaner, more compact and more uniform.

In keeping with the Bell System policy of sharing technical know-how with all of industry, Western Electric will make this tool commercially available to electrical manufacturing companies, such as radio, television and communications producers, through licensed tool manufacturers.

You're right if you think we're more than a little pleased with our accomplishment. And as we have been many times before, we're proud of the engineers in all fields—electronics, mechanical, electrical, metallurgical, chemical, industrial—who uphold our reputation for leadership in fundamental manufacturing techniques.



How a solderless connection is made: (1) Skinned wire approaches the small flared opening in the tool tip. (2) Wire is inserted in hole. (3) Wire is bent and anchored by means of notch in side of gun tip. (4) Gun tip is slipped over rectangular wire terminal. (5) Spindle of gun tip rotates to wrap wire around terminal. (6) Six wire wraps around terminal complete electrically sound joint without soldering.

Western Electric



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Manufacturing plants in Chicago, Ill. • Kearny, N. J. • Baltimore, Md. • Indianapolis, Ind. • Allentown, Pa. • Winston-Salem, N. C. • Buffalo, N. Y. • Haverhill, Mass. • Lawrence, Mass. • Lincoln, Neb. • St. Paul, Minn. • Duluth, Minn. Distributing Centers in 29 cities and Installation headquarters in 15 cities. Company headquarters, 195 Broadway, New York City.

Company Interviews

The following companies will hold interviews during the school year for seniors and underclassmen. Additional companies and interviewing dates will be added during the year. You must sign up for interviews at the Placement Office. For further information, see Miss Patricia Coulter at the George Washington University Placement Office.

November 17, Naval Ordnance Laboratory; November 18, Curtiss Wright Corporation; November 18, Bell System; November ?, Ford Motor Co.

December 8, American Can Co.; December 15, Philco Corporation; December 16, McDonnell Aircraft Corporation.

January 8, Sperry Gyroscope Company; January 28, Glenn L. Martin Company.

February 25, Sperry Gyroscope Company.

March 1, Baton Rouge Refinery of Esso Standard Oil Co.; March 2, Curtiss Wright Corporation; March 2, Naval Ordnance Laboratory; March 10, Bendix Corporation; March 15, North American Aviation, Inc.; March 17, B. F. Goodrich Co.; March 17, McDonnell Aircraft Corporation; March 17, General Electric Co.; March 22, Engineering and Research Corporation; March 25-26, Telephone Company.

Lincoln Arc Welding Foundation Contest

The James F. Lincoln Arc Welding Foundation is conducting its seventh annual Engineering Undergraduate Award and Scholarship Program. The object and purpose of the foundation is . . . "to encourage and stimulate scientific interest in, and scientific study, research and education in respect to the development of the arc welding industry through advance in the knowledge of the design and practical application of the arc welding process."

Engineering undergraduates will compete for cash awards by submitting papers describing the arc welding design of either a machine, machine component, structure or structural component. Top award is \$500.

The closing date of the contest is June 28, 1954. All engineering undergraduates are eligible to compete.

Further information may be obtained by writing: The James F. Lincoln Arc Welding Foundation, Cleveland 13, Ohio.

Why the Expensive Text Books?

The Publisher's Story:

In spite of student feelings to the contrary a recent survey of the Textbook Publishing Industry by Stanley B. Hunt and Associates shows that the publisher, for his risk and effort, makes little more than five percent profit. The statistics released by the American Textbook Publishers Institute show manufacturing costs, royalties, plant maintenance and other related costs as taking a 54.8% bite out of the publishing dollar; selling cost and salaries, 8.7c; local takes and rent, 13.8c; federal taxes, 6.13c; shipping and warehousing, 3.9c; and advertising and sample copies and mailing costs, 7.4c. This leaves the publisher 5.1c profits in the publishing dollar.

The Institute points out that although publishers' costs increased 91 percent in the last twelve years, textbook prices increased only 50 percent. They compare this with a 224 percent increase of wholesale prices of all commodities in the same period.

They also add, "Publishers of college textbooks will continue to resist increasing costs to supply the best available textbooks at the lowest possible price."

The Student Bookstore's Story:

Mrs. Birdie Harris, manager of the Student Bookstore, in a recent interview commented that the retail store, especially smaller ones like the one on campus, stands to take great losses but small profit, unless the Bookstore receives a twenty percent discount on most books it buys, but in return must pay for shipping costs. If they are able to sell all of the books, all very well, but quite often they are caught with some books left over due to a change in edition, or a demand lower than anticipated. Then the Bookstore must try to sell the books elsewhere, usually at a loss, for some publishers will only accept a percentage of their books back.

In spite of this the Bookstore maintains a lower mark-up on books than most other retail stores and the management plans to continue to do so.

**A MESSAGE TO
COLLEGE ENGINEERING
STUDENTS**

from R. S. Kersh, Vice-President,
Northeastern Region,
Westinghouse Electric Corporation



To the young engineer eager for a sales career

Show me an engineer with a friendly attitude, and an eagerness to help people solve their problems and I'll show you a good sales engineer.

There's nothing mysterious about this job of being a sales engineer. To apply the products of his company to his customers' needs, he must be a good engineer.

To gain the confidence of his customers he must be a good salesman. This means simply that he should have an inquisitive nature, the desire to help others, and the quality of enthusiasm.

The Westinghouse sales engineer works with our design engineers, production engineers and engineering

departments of our customers. He is a highly important and valued professional man.

What are the opportunities at Westinghouse for a young man eager for a career in sales? They are just about what you want to make them! This company's 30 divisions make over 3,000 products, totaling over \$1½ billion in sales annually. Westinghouse is looking to the future with a vast expansion program. We are a fast-growing company in the dynamic field of electrical energy.

If your sights are set on a sales career, I am sure you will find the training and opportunity you seek with Westinghouse.

G-1027

**YOU CAN BE SURE...IF IT'S
Westinghouse**

For information on career opportunities with Westinghouse, consult Placement Officer of your University, or send for our 34-page book, *Finding Your Place in Industry*.

Write: Mr. J. B. Parks, Regional Educational Co-ordinator, Westinghouse Electric Corporation, 3001 Walnut Street, Philadelphia 4, Pennsylvania.



ENGINEERING PERSONALITIES

HENRY WILLIAM HERZOG



Henry William Herzog is well known to the G. W. engineering student as the highly regarded Treasurer of the George Washington University. However, relatively few are aware that Mr. Herzog's original tie with the University was that of an engineering student, and that he received a

Bachelor of Civil Engineering degree in 1930.

His first job, after graduation, was with the Charles H. Tompkins Co., and it was on this job that he first became interested in control techniques and methods. In 1934, he entered the service of G.W.U., as an assistant to the Comptroller (Charles W. Holmes). By 1939 he had advanced to the position of Assistant Comptroller and in 1940, after the death of Mr. Holmes, he became Comptroller. He continued to serve in this capacity until last February when he was elevated to the position of Treasurer.

During these golden years of rapid advancement, Mr. Herzog also found time to marry Miss Helen Nutter, who at the time of their marriage was personal secretary to President Cloyd Heck Marvin. They now have two children, Helen Garland and Henry William Herzog, Jr., who are 14 and 12 years old respectively.

During World War II, Mr. Herzog had added to his duties the responsibility of taking care of all matters relative to the research project being conducted by the University for the Office of Scientific Research and Development at the Allegany Ballistic Laboratory. The University at that time employed over 700 scientists working on the development of the Bazooka and other rocket weapons.

While enrolled as a student at G.W.U., Mr. Herzog helped organize the G. W. chapter of Omicron Delta Kappa, the honorary activities fraternity for men. In addition, he belonged to such organizations as Pi Delta Epsilon, honorary journalistic society; Gate and Key, honorary activities society for members of social Fraternities; and Sigma Phi Epsilon, social fraternity.

Since leaving school, Mr. Herzog has con-

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BERNARD KILDAY



Quiet, studious, and efficient are excellent introductory words for describing the personality of the serious Bernard Kilday. However, despite his quiet demeanor, Mr. Kilday's participation in University activities has won him considerable recognition on the campus.

Bernard, a native of the Washington area, graduated from St. John's High School in D. C. in 1950. At St. John's Bernard not only excelled in Math and Science courses, winning several medals in both categories, but also found time to run on the track team and manage St. John's undefeated 1947 football team.

At George Washington, Bernard is a senior, majoring in Electrical Engineering with a communications option. His record with college level science courses parallels his high school achievements. Since entering George Washington, he has walked off with such academic prizes as the James MacBride Sterret Physics Award for maintaining the highest average in Physics 6, 7, and 8; and 500 dollar General Electric Scholarship which will go a long way in paying for his last year at school.

However, it hasn't been all study for Bernard. He has been active in many organizations such as Phi Eta Sigma, freshman honorary fraternity; Sigma Tau, engineering honorary fraternity; and Theta Tau, engineering fraternity. In addition, he is presently Treasurer for the joint AIEE and IRE Society.

Between school years, Bernard has worked one summer as an Engineering Draftsman at Melpar and, during this last summer, as an Engineering Trainee for the Bureau of Standards.

After he graduates next June, Bernard hopes to work for the government and at the same time take graduate work in Engineering. Naturally, these plans must pass the approval of Uncle Sam as Bernard is young, unmarried, and very healthy.

Regardless of what the future holds, Bernard Kilday can be counted on to perform his assignments diligently and well.



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- Development and design of new recording and producing methods.

- Design of receiving, power, cathode ray, gas and photo tubes.

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Also many opportunities for Mechanical and Chemical Engineers and Physicists.



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and additional mathematics and physics. Mechanical drafting courses have been halved and drafting practically eliminated from design courses.

Scholarship changes along the line have been made that are significant. A "quality point index" method of rating has been established with an "index" value for graduation that is higher than that for passing a course. Thus students can "bilge out," to borrow a Naval Academy term, even though doing "passing" work. This insures the School of Engineering of a permanent and rather large group of students who are on probation.

In spite of generally improved scholarship, graduation "with distinction" in Engineering has become almost extinct owing to a University requirement of a 3.5 quality point index. This standard was established based on 120 hours required for the Arts and Sciences degrees. The Engineering degrees require 140 hours, an average student load of $2\frac{1}{2}$ credit hours per week in excess of the Arts student, yet the Engineering student in his first two years competes for grades in identical classes with students majoring in English, physics, chemistry, and others. The latter majors never

register for Engineering courses.

Departing for the moment from my avowed intention of not evaluating changes I consider one change deplorable: the elimination of the old Honor System. This system involved no trial courts or committees, no telling tales on one another; it simply required signing a pledge of "no unauthorized aid on this examination." Since personal honesty is now not considered involved, some students seem to feel the examination is a game in which the student tries to see how much can be put over on the "prof." That "angle" has particular reference to out-of-class work.

The average student today, whether part-time or full-time, is likely to be married and may have one or more children. His time is therefore divided between school and family, and sometimes a job. It is greatly to his credit that he can successfully and cheerfully carry out this program, particularly so if he contributes time to extra-curricula activities. These latter promote student morale and the reputation of the School.


Martial status and consequent family responsibilities, or perhaps military experience, or excessive supervision in recreation through

(Please turn to page 20)



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for irrigation pipe on Republic's
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The cattle in the picture, for instance, are at Republic's experimental farm. They are part of a study to determine how much extra grass, hence extra meat, can be produced by irrigation. The purpose of the experiment is to prove the benefit of converting worn-out crop land to profitable grazing area.

The economic reasons for Republic's experiment

are that animals must be fenced and Republic makes steel farm fence; also that irrigation requires pipe and Republic makes steel irrigation pipe. But beyond this immediate commercial aspect, Republic's experimental farm has a goal reaching far into the future.

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We hope such research programs, of which our farm experiments are only one example, will catalog Republic in your mind as a progressive, forward-thinking company.

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conditions is extremely essential. Where water pressure is everywhere constant at a given depth, the soil pressure is not necessarily constant, and rarely is. These considerations apply also to underground conduit systems.

Another very important concept discussed is friction. It may not be apparent at first glance, just how important the knowledge of the nature of the friction between soil particles is. Buildings, dams, and other structures would never have been successfully built, had not soil friction been considered.

Most of the information about the shearing strengths of various types of sands and clays, earth pressures in various types of soil has been obtained through experiments in the field and in the laboratory. The methods of obtaining this information by experiment will also be taught in the course. The name of Dr. Karl Terzaghi will be mentioned quite a few times during the course, and rightly so. The engineering profession is greatly indebted to this pioneer researcher in soil mechanics. His theories and experiments are invaluable to the science of soil mechanics.

HERZOG

(Continued from page 14)

tinued to join and to be an asset to such organizations as the Washington Rotary Club; the Controllers Institute of America; and the Easterner Association of College and University Business Officers. In all these organizations, he has at some time served in the capacity of president.

Besides his work at the University, he has also acted as a consultant for the American Council on Education and for various government agencies on congressional legislation affecting colleges and universities.

It is plain that the native born Mr. Herzog has had very little time for leisure in his life, and it is also plain that the engineering profession lost a very capable man when he became interested in controlling the University's purse strings.



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SIMPLY being able to create a unique machine design is no longer enough to insure a successful career in product engineering. Today, more than ever before, a machine design must be strong and durable, *yet be the lowest in cost*, to be acceptable to company management.

As a result, many new designs are of welded steel construction and existing designs are being converted to eliminate excessive material and to reduce the number of shop manhours needed for fabrication.



Fig. 1. Former Design. Machine part required milling and drilling. Weighed 18 pounds, twice as much as steel design.



Fig. 2. Present Construction. Bearing housing and arms are 10 gauge metal. Weighs only 8 1/2 pounds. Cost 30% less to manufacture.

HOW TO DESIGN FOR WELDED STEEL

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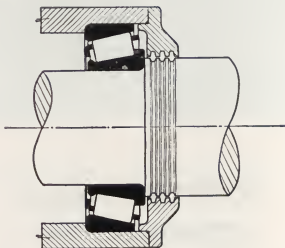


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Some of the engineering problems you'll face after graduation will involve bearing applications. For help in learning more about bearings, write for the 270-page General Information Manual on Timken bearings. And for information about the excellent job opportunities at the Timken Company, write for a copy of "This Is Timken". The Timken Roller Bearing Company, Canton 6, Ohio.



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EVOLUTION

(Continued from page 16)

the years, likely explain the characteristic of present-day students which we may describe as greater maturity. They give us an impression of greater age, if compared with the students of the previous generation. The glee club no longer sings "The Mulligan Musketeers" but rather the "Hallelujah Chorus." Fraternities no longer have "goats" to be put through a "roughhouse" initiation; instead, the "pledges" are required to do menial labor. It is easier for the committee. Officers of the ASME Student Branch do not request Mechanical Catalogues for the members because it is "too much trouble to distribute them."

On the other hand, the previous generation was usually unmarried while in college and seemed to live for the college life. They exhibited a certain carefree attitude and a spontaneity which frequently found vent in pranks. Our best remembered freshman class was given to chalking wisecracks and cartoons on the drafting-room walls. When requested to clean off what they had put on the walls and further admonished "No more writing on the walls," the class promptly cleaned the walls to perfection and transferred the writing to the ceiling. On another occasion an instructor investigating a commotion in the drafting-room on the 4th floor of old Lisner Hall arrived just in time to see the last of the class scurrying through the window and down the fire-escape. That is, all but one were escaping. The lone "candidate" remained because he was sans pants. And are we likely to forget the group that one night

(Please turn to page 22)

DEAN'S COLUMN

(Continued from page 8)

to one's fellow humans that may return some measure of the desirable things associated with our mores and customs. University attendance however provides nothing more than the opportunity to pursue your education in a relatively effective fashion—whether or not you become educated is entirely your responsibility. The possibilities for learning are boundless in a University, the possibilities for education lie only within you. About now many students are so embroiled in learning they are in danger of losing sight of their objective. You might find it worthwhile at this time to pause and reflect, to re-evaluate, and to regain perspective. Take a day off from learning and reestablish your sense of values. Most of all be sure you know why you are doing the things that occupy your time and challenge your resources.

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EVOLUTION

(Continued from page 20)

emblazoned the words "Engineers' Ball" across the roof of the "tin tabernacle" and thereby gained (questionable) publicity for that annual event?

Next, there would seem to be a considerable change in athletic habits of the Engineering students. In one of my very first classes the varsity fullback, center, a halfback, and a guard showed up; besides the varsity high-jumper and undoubtedly some lesser lights. These all in one class! Also during the first decade of my teaching the School of Engineering fielded a baseball team which the versatile Mechanical Engineering Faculty was called upon to coach. This team finally went under the intramural program, then changed to softball. Among the Engineering students each year a varsity man or two may be found, but there seem to be little general interest in participation. Not since the days of George Jackson and Gus Free has our Hvid engine had a hand cranking.

The athletic ability of the earlier generation was probably reflected also in the University faculty as a Faculty-ODK (hardball) baseball game was an annual event. At one time at least two former Olympic athletes were among our number. The faculty today would probably have some difficulty assembling a team.

In dress there has been a trend to less formal and more comfortable styles. White tie and tails were formerly called for on formal occasions, whereas now the dinner jacket and black tie—formerly rated as formal for "stag" affairs—is sufficient. Most student events seem now to be "semi-formal," which means strictly informal as far as the male is concerned. At the other end of the scale, class dress was collar, tie, and business suit; now it is mainly open-neck sport shirt or Tee-shirt, without coat or tie.

While speaking of dress perhaps we might be in order if we mention the passing of the "football flower." At every game the girl who was properly dressed for the occasion wore a giant yellow chrysanthemum.

Student organizations within the School have continuously increased in number. Thirty years ago there were only two; a general Engineering Society and the Sigma Tau honor society, although strictly speaking the Chemical Society and Architectural Society should be mentioned. These latter groups, however, have been severed from the School of Engineering. The old Engineering Society has divided into

(Please turn to page 24)

MECHELECIV

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NOVEMBER 1953

events. This year however they have been combined and will be held May 1, 1954. The evening will start off with dinner followed by the awarding of scholarships and prizes and then after recognition is given the deserving, the ball will commence.

The most recent addition to the Council's duties has been the supervision of the Davis-Hodgkins house at 731 - 22nd street, better known as the Engineers' house. You can drop in here anytime for a quick cup of coffee or help (?) on a crucial problem or just come on in and get to know your fellow engineering students. The furnishings of the 'House' leave much to be desired but it is hoped the House Manager and the Council will soon remedy this. It is apparent that the events named and the management of the Davis-Hodgkins House must be handled to the satisfaction of you the engineering student. What better and more efficient way could these problems and activities be organized than by a representative group of the student body—your Engineers' Council.

Since your attention has been held this long, will you spare a few more minutes to have a few questions answered? Such as, how does one go about getting these problems solved to his satisfaction. Participation is the best approach. The meetings of the Engineers' Council are open to all engineering students. The meetings are held the last Wednesday of each month and you are invited to attend. They are held in the Davis-Hodgkins house and usually commence at 8:15 p.m.

The Council is composed of two delegates from each of the engineering organizations. These organizations are The American Society of Civil Engineers, The American Society of Mechanical Engineers, The Institute of Radio Engineers, The American Institute of Electrical Engineers, Theta Tau and Sigma Tau. Each of these societies elects two delegates to the Council and in addition the manager of the Engineers' House and the Business Manager of the MECHELECIV are members. The house manager is elected from the student body. Each delegate serves a term of one year, beginning in either May or January. Each year the Council elects a delegate to the Student Council to represent the School of Engineering. Every engineering student should make it his objective to serve on the Engineers' Council.

Now that you are familiar with your Engi-

four separate societies, a professional fraternity has been added, the Engineers' Council organized, and this magazine, "Mecheleciv," established. The growth of these organizations is partly a reflection of increased enrollment, but also of greater general student interest.

The student graduating in recent years has been fortunate in that jobs have been plentiful. Representatives from industry and government are competing for available men and offering exceedingly attractive salaries. An article in Collier's Magazine of October 2, 1953, gives figures that are startling. Summer employment before graduation is offered as a get-acquainted process. In addition, transition to industry has been made easy for the young engineer through training programs whereby the activities of the company are put on display to assist the new employee in selecting the field for his career. Furthermore, industry today realizes that engineers must be trained in company traditions and procedure, and they are not likely to feel the effects of a depression as early as have their predecessors.

The young engineer starting out in the profession today must face the problem of registration as a Professional Engineer. It poses quite a problem. If employed by the government or other large organizations, registration is probably not essential, but an individual business or employment in a small organization necessitates registration. If registration is anticipated, the student must make sure that he is graduating from an accredited curriculum, and later, while an "engineer in training", that he is working under a registered professional engineer. There was nothing like that in the old days.

In view of the foregoing statement relative to graduation from an accredited curriculum, plus the fact that recent by-law changes of the American Society of Mechanical Engineers set up the same requirement for membership, it would appear that the present-day student must lean heavily upon his faculty adviser for such miscellaneous information.

In conclusion, today's student should remember that these days will all too soon become the "good old days."

neers' Council and its activities why don't you lend a helping hand. You will be the benefactor. Make plans now for the Banquet and Ball, May 1, 1954, at the Hotel 2400. Attend the next Council meeting.

Photography helps assemble it in any language



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Before shipping a drilling rig overseas, National Supply frequently first sets it up here for tests and paints the complex parts in *coded colors*. Then a color photograph is made.

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National Supply's experience is an example of how photography saves time, cuts cost, reduces error, improves output.

As a matter of fact, so many reasons for photography, so many ways of using it are being found, that well-qualified graduates in the physical sciences and in engineering have been led to find positions with the Eastman Kodak Company. This number has included many returning servicemen.

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JOHN B. NOLTE, Purdue University, asks:

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Who is eligible for this program?

In general, the Program is open to college graduates with degrees in engineering and science, and a limited number of business administration and liberal arts graduates. We are looking for outstanding young men with sound educational backgrounds, well-balanced personalities, demonstrated thinking abilities, and having the potential to develop toward top level responsibility in key assignments.

How long is the program?

The normal length of the Program is three years. However, some individuals may be able to complete their training in a shorter period because of previous knowledge or experience in manufacturing work.

What type of work assignments are made?

Work assignments are provided in all phases of manufacturing and related functions so that each man will acquire knowledge of manufacturing engineering, including manufacturing methods and techniques, shop operation, production control, personnel administration, labor relations, engineering activities, sales and manufacturing co-ordination, and general business administration.

In addition to job assignments, classroom courses

cover such subjects as Company organization, manufacturing operations, labor and personnel relations, business administration, law and relationships between manufacturing and other functions of the business. Progress on the job and in classroom work is carefully observed and reviewed periodically with each man to assist him in his career.

What happens after training is completed?

After completing the training program, graduates are placed in operating departments and divisions throughout the Company in positions where leadership and initiative are needed. All placements are made in relation to the aptitudes, abilities, and interests of the graduates.

At General Electric, manufacturing operations involve the administration and supervision of activities of more than 100,000 men and women in more than 100 plants, who are involved in the making of some 200,000 different products.

The wide scope of these activities, the great variety of products, and the diversity of manufacturing activities offer limitless opportunities and exciting challenges to college graduates today.

Manufacturing training is a foundation for leadership—and an opportunity to build a satisfying, rewarding career in one of America's most important industries.

If you are a graduate engineer, or a graduate with definite technical inclinations that include an interest in the career possibilities in manufacturing, see your college placement director for the date of the next visit of the General Electric representative on your campus. Meanwhile, for further information on opportunities with General Electric write to College Editor, Dept. 2-123, General Electric Company, Schenectady 5, New York.

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